

Groundwater Summit Breakout Session Matrix

Issue Category	Policy/Concepts	Regulatory/ Legislative Approaches	Incentives/ Investment/ Voluntary Approaches	Education/ Communication	Research/ Monitoring/ Data Collection	Planning/ Coordination	Other
<b><i>Quality Issues</i></b>							
<b><u>A. Groundwater Quality: Is Current Law Working?</u></b>	Should the 1984 Groundwater Law be revisited?	Establish different model for regulatory program	Provide grant money to communities to implement DNR and/or EPA rules	Provide more educational information on water quality for private water supplies	Collect more toxicological data for health advisories	Coordinate with municipal water suppliers in setting and implementing new water quality standards	
<i>Groundwater standards - How well are they working?</i>	Is the groundwater law already slowly being chipped away? (e.g., by Aquifer Storage and Recovery (ASR), natural attenuation)	Set Enforcement Standard where it provides a warning system	Recognize economic impacts of adopting groundwater standards		Establish inventories of chemical use to determine priorities for monitoring		
	Clarify policy for applying a regulation in non-traditional sites (e.g. point of standards application for Milwaukee Deep Tunnels)	Require additional standards for well construction to protect water quality			Correlate toxicity levels to detection ranges for contaminants (what levels are necessary to protect human and aquatic health at reasonable cost)		
	Balance sound policy (science- based) with public perception (e.g. low detection levels that are possible now mean higher frequency of detection but not necessarily more contamination)	Enforce requirement that all agencies are to adopt groundwater standards for programs			Research innovative well construction methods for certain contaminants (e.g. arsenic and nitrates)		

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	Recognize time lags between improvements in water resources and implementation of changed management practices	Evaluate implications of using public drinking water standards or groundwater standards as defacto private drinking water standards.			Research on alternatives to chlorides in industry and water treatment		
	Examine and improve security for groundwater supplies	Address inconsistencies between federal drinking water standards and state NR 140 groundwater standards			Need a better understanding of geochemical processes		
<b><u>B. "How Clean is Clean?"</u></b>	How clean does groundwater need to be?	Establish better standards for clean up (remediation) sites	Seek better ways to fund clean up efforts (or make more affordable)	Use Clean-up Strategies success stories in educational efforts	Assess what is successful (clean up strategies, natural attenuation).	Need better coordination between DNR groundwater and remediation staff in closing contaminated sites	
<i>Remediation and clean-up issues</i>	Should the issue of aquifer classification be revisited?	Address issue of persistent contaminants (e.g. DNAPLs)	Evaluate whether clean up of organics can be done cost effectively	Communicate: Groundwater standards work well now.	Evaluate clean up strategies. Are sites being cleaned up? Is groundwater quality improving?		
	Consider some degradation of the resource to solve other environmental problems.	Address long term maintenance of protection systems (e.g. landfill liners)	Use PECFA fund to clean up sites rather than engineering studies (better use of money)	Communicate: Remediation takes a long time			

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<b><u>C. "Chemical Soup Syndrome"</u></b>	Synergistic & cumulative effects of pollutants are not adequately considered by current laws	Revisit the synergistic effects of contaminants when setting standards			Look at cumulative effects of contaminants on human health and other organisms	Address management of cumulative effects across agency lines (because each agency sets their own approach).	
<i>Multiple and cumulative effects</i>	Recognize difficulty in developing a management strategy across contaminant types.						
<b><u>D. Emerging Contaminants</u></b>	Find solutions to arsenic contamination problems	Need groundwater standards for pharmaceuticals	Provide assistance to small communities to meet arsenic and radium standards	Communicate relative risks of different contaminants (e.g. arsenic compared to benzene).	Identify existing data, perform statewide surveys on pharmaceuticals, pathogens, and natural contaminants		
<i>Total dissolved solids (TDS), radionuclides, arsenic</i>	Address natural radioactivity in groundwater	Regulate disposal of water/wastewater sludge contaminated by arsenic and radioactivity		Compare risk between manmade and naturally-occurring contaminants	Research cause of increased radioactivity in the deep aquifer in SE Wisconsin		

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<i>Pharmaceuticals and endocrine disrupters</i>	"Is it the State's job to protect people from natural contaminants?"	Enact regulations to prevent "new" contaminants from being introduced into the water supply.			Research on "new" contaminants and preventing "new" contaminants from reaching the water supply/groundwater.		
	Address nuisance microorganisms like iron and sulfur bacteria	Ensure that new standards or rules are supported by toxicological data			Need ability to detect/quantify emerging contaminants and medical conditions related to drinking water quality (e.g. many people in an area with same illness)		
<b><u>E. Agricultural Impacts</u></b>	How to balance current food policies (inexpensive food/profit on volume) with groundwater protection?	Should nitrate in groundwater be regulated? e.g. restrictions on private wells	Encourage more farmers to adopt N management	Provide more information to farmers about N crediting	Identify and track constituents contributing to nonpoint source pollution (N and P)		
<i>(Nonpoint sources, pesticides, and fertilizers)</i>	Develop nitrate policy; address nitrate contamination issues	Enact & enforce "laws with teeth"	Require non-potato crop in affected areas	Promote public health and education for rural residents	Develop methods to determine source of N contamination		
	Make use of pesticide use/impacts database	Address nitrate exemptions in current codes	Provide cost-sharing for reducing nitrate levels	Recognize that nitrate contamination is not universally viewed as a problem - perhaps related to its ubiquity	Identify technology solutions for reducing nitrate pollution		

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		Clarify who has authority to regulate nitrate	Find relatively easy solutions such as composting potato vines to reduce N leaching.	Promote the proper use of fertilizers and pesticides	Monitor quality of rural water every 5 years.		
		Evaluate implications of Food Quality Protection Act on groundwater regulations	Provide incentives for crop rotations to decrease nitrate levels in groundwater.		Evaluate nitrogen and phosphorus application rates - are they too high?		
					Evaluate impact of nitrate in groundwater on aquatic ecosystems.		
					Evaluate leaching over whole rotation not just one crop.		
<b><u>F. Wastewater Treatment and Land Application</u></b>	Does COMM 83 (onsite wastewater treatment system code) allow too much contamination?	Enforce existing standards and other laws (holding tank pumping)	Provide direction on "economic and technical feasibility exemptions" with regard to NR140 standards as applied to wastewater disposal.		Research on the effect of anti-bacterial soaps on septic systems		
	Address inadequate protection of sensitive areas (example Door Co.)	Set effluent limitations for point source discharges to disappearing streams and other karst features			Develop a better understanding of microbial pathogens		
	Does land-applied wastewater result in pathogens finding way into groundwater?				Perform more frequent testing of private wells for bacteria and nitrate		

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<b><u>G. Wellhead Protection and Source Water Assessment</u></b>	Encourage protection of groundwater recharge areas	Expand power of municipalities to protect Source Water Protection Areas				Address issue of overlapping jurisdictions with regard to drinking water protection	
	Address the loss of undeveloped land which has attenuative properties	Require regular inspection of wellhead protection/source water areas				Explore ways to protect water supply when wellhead protection areas extend outside city limits	
		Implement local to regional well prohibitions in bad water quality areas				Make sure planning commissions are aware of Source Water Assessment program designation of local "problem" areas	
<b><i>Quantity Issues</i></b>							
<b><u>H. Groundwater Quantity - General</u></b>	Determine goals of "quantity strategy" (e.g. restoration of water level and baseflow)	Is legislative or political process ready to deal with quantity regulations?	Assess where money come from to pay for changes	Target education for Legislators	Base groundwater quantity strategy on best available science	Explore collaborative approaches between industry and government	Recognize that locals lack implementation structure for managing water quantity
<i>Is there a need for statewide groundwater strategy?</i>	Is there consensus on the need to change, or can it be reached?	Develop laws to address water quantity issues in Wisconsin	Establish funding mechanism for groundwater quantity management	Educate public to understand concepts involved and to minimize emotional aspects of issue (e.g. water use by Perrier vs. some farming operations vs. beer production)	Check laws/regulations in other states (Calif., Florida, western states) to see what has and hasn't worked	Use data and groundwater flow models to predict trends, communicate with community leaders, planners, regulators, citizens	Recognize that groundwater levels have risen in some areas (e.g., parts of Dane Co.)

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	Assess whether water quantity should be addressed comprehensively or case by case	Assess whether opening up the groundwater law to add quantity would weaken it	Promote incentives and cooperation efforts, not command and control	Provide continuing education for professionals and industries using water	Determine how mining of resource diminishes supply	Compare local solutions to groundwater quantity problems vs. regional solutions.	Address population growth in water-short areas
	Need for "multifaceted" approach - planning, education, laws, research, etc. in dealing with groundwater quantity problems	Establish Preventive Action Limit (PAL) process for water quantity.	Acknowledge economic advantages to those who do nothing if others take action (e.g., to move to surface water sources)	Develop technical education program and take around state to local officials. Emphasize benefits of action - not all bad news.	Research other states/nations solutions to groundwater quantity problems, including jurisdiction and legal issues	Focus water quantity efforts in areas where groundwater is being depleted.	<i>Seek trust and cooperation among all the parties to solve quantity problems</i>
	Should water quantity policies be applied to the entire aquifer or only recharge areas?	Reorganize DNR along groundwater aquifer boundaries		Improve public's understanding of connection between groundwater use and groundwater recharge	Collect data on water use, exportation, and wastewater discharges	Address issues on a comprehensive basis rather than case by case	<i>Set clear goals for quantity strategy</i>
	Add quantity issue to the quality strategy being used statewide.	Strengthen water use reporting process to provide evidence for action			Develop statewide groundwater flow models; build on existing local and regional ones	Need for "joint management" in areas with groundwater quantity problems	
	Need to prioritize limited groundwater resources				Check public sentiment regarding how much groundwater withdrawal they are willing to tolerate	Make use of regional planning commissions and Smart Growth laws to address quantity management	

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	Develop a mechanism/ strategy to avoid western US style water wars				Define what a groundwater quantity problem is.	Need for flexible approach to deal w/groundwater quantity problems - needs to be able to work at different levels: local, regional, state, national, international; within "problemshed"	
<b><u>I. Competing Water Uses &amp; Water Supply Needs</u></b>	Need more protection of private wells from pumping by municipal wells	Set targets for water use dependent on industry .		Provide education on groundwater principles - dispel the safe yield myth.	Need data on current water use	Use regional approach to water use	Need for dispute resolution for competing groundwater users
	Assess different requirements for siting new wells vs. replacing existing ones	Allocate water based on "best use" - but who will decide?		Improve public awareness of the impact of water use	Determine where water supply problems exist and where they do not	Prioritize among the competing demands for water	Evaluate use of treated water "Should we fight fires with potable water?"
	Develop a comprehensive groundwater use strategy.	Develop rules to determine how to balance the competing water needs given the scarce resources			Require all users to report water use as municipalities currently do	Base water use on "first come, first serve" or equal sharing?	
	Define "consumptive use" relative to economic development.	Create legal mechanism to prohibit extraction of groundwater for private water supplies in areas with a public water supply system					
<b><u>J. Water Conservation</u></b>	Promote water conservation (the need to use less water & use water more wisely)	Enact legislation to require water conservation	Change municipal water pricing policies to encourage conservation	Proactive education on water conservation.	Gather information about and make use of successful water conservation strategies	Target areas for water conservation (e.g. urban areas)	



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<i>Individual homes, businesses, communities.</i>	Balance use vs. conservation in a working landscape.	Freeze (water use) levels at today's numbers.	Provide tax incentives to large water users to encourage conservation	Target hospitality industry (hotels, restaurants, etc.)	Measure impact conservation messages are having.	Ensure internal consistency of agencies and conservation policy with respect to economic development vs. water use.	
	Foster leadership on conservation issues	Enforce conservation policy on the books.	Use water bills/cost to encourage water conservation at residential level	Involve local Health Department in helping users learn to conserve.	Determine benefits and limits of water conservation (highest and lowest attainable).		
	Need for changes in public water use to conserve water	Enact regulation of industry to ensure they are not wasting water	Make more funds available for water conservation efforts	Increase education/awareness of use and ways to conserve (especially important during "drought" periods)	Collect information on high rate use of water (like lawn watering & other practices)		
<b><u>K. High Capacity Wells</u></b>	How to prioritize water withdrawal?	Create legal tools to regulate high capacity pumping (e.g. farm, resort wells)	It can be expensive to show no impact - can municipalities afford it?		Develop a standard to define no adverse impact		
<i>Location/permitting of hi-cap wells</i>	Recognize that only a handful of well applications each year potentially have an adverse impact	Create legislation to regulate groundwater quantity (high capacity well law without exemptions)	Establish fee structure per volume used as part of permitting for high cap wells		Collect data on amount of water being pumped from high capacity wells.		
	Should the burden be on new water users to show no adverse impact?	Clarify DNR policy on high-cap wells (relationship to quantity issues)			Need to understand the impact of high capacity wells on biological resources		

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	Look beyond capacity problems created by individual high-capacity permit seekers.	Regulate the maximum amount of groundwater that may be pumped			Perform site evaluations on high-cap wells.		
	Recognize that different users have different impacts (e.g., one may discharge to a stream another loses water as steam)	Limit number of irrigation wells.					
	Evaluate agricultural practices (Overproduction of vegetables?).						
<b><u>L. Water Rate Structures and Pricing</u></b>	Change municipal water pricing policies to encourage conservation	Set rate structures on statewide water conservation policy/legislation	Alter PSC rate structures to promote less use, but should not be uniform statewide	Educate PSC and staff to appreciate the need to address water quantity issues.	Research on commodification of water where appropriate	Form transition plan for implementing new rate structures.	

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	Reevaluate Public Service Commission (PSC) rates - (currently "Use More Pay Less" mentality).	Distinguish between "Newcomers" (who benefit from excess capacity of the water supply system) and "Long Time Users" in setting rates (e.g. Newcomers could pay a special "user fee" in order for municipality to recuperate initial investment and pass savings onto long-time users)	Evaluate possible fee sources- new users, new wells, abandonment fees		Measure: Who will be affected by price structure changes and how?		
<b><u>M. Groundwater Recharge</u></b>	Use regional or watershed approach to address problems with regional groundwater recharge	Address loss of groundwater recharge areas in the state		Improve public's understanding of connection between groundwater use and groundwater recharge	Study impacts of using urban runoff to increase groundwater recharge		
	Encourage protection of groundwater recharge areas				Research on recharge area needs to preserve stream baseflow		
	Develop a process for protection of headwater areas				Research on recharge strategies in deficient areas, other than rebound by not pumping		

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<b><u>N. Great Lakes Withdrawal/ Interbasin Transfers</u></b>	Prevent loss of Great Lakes water through diversion	Evaluate how International Law/Agreements may supersede State or Local laws in regards to water withdrawals			Determine statewide groundwater budget (current in-state use vs. out-of-state use and likely future trends)		
	Prevent loss of groundwater sent out of state	Interbasin water transfer: restriction, prohibition or mitigation?			Investigate impacts of water exportation.		
	Use standard Great Lakes withdrawal process for other areas	Make sure our laws protect groundwater from being sold as a commodity					
<b><u>O. Efficiency of Water Systems</u></b>	Fix leaks (in distribution system and/or homes) to reduce losses and improve efficiency	Set targets to reduce leaks.	Develop a process to provide incentives for leak repairs (similar to those used in agriculture)	Target municipalities, users, commercial/industrial/private	Measure the relative contributions to cumulative leaks (e.g. water main leaks vs. leaks at the house/building; water main breaks, cleaning).	Involve local water utility to help identify problems in losing water.	
		Measure cumulative leaks with pumping and metered numbers.		Messages: Worthwhile economically and environmentally.	Find out if somebody has already done this research (WCWA/AWWA)		
				Measure success - did the message inform the audience/move them to action?	Investigate technology of how to fix the leaks.		
<b><u>Quality and Quantity</u></b>							

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<b><u>P. Groundwater Management (Quality and Quantity)</u></b>	Recognize differing needs of humans and environment in terms of groundwater protection	Integrate groundwater quantity and quality management within one agency (DNR)	Need more funding (at all levels) to deal with both water quality and quantity issues in Wisconsin	Improve understanding of groundwater systems	Characterize the quality and quantity concerns for Wisconsin's groundwater.	Political boundaries impede collaboration in groundwater.	
	Develop a process to deal with expected and unexpected groundwater quality and quantity issues.	Apply regulations and standards consistently among agencies responsible for groundwater protection.	Seek creative sources of additional revenue for groundwater management (e.g., Groundwater Guardian to pay for well abandonment)	Improve general public's understanding of groundwater encourage better decision making	Improve understanding of groundwater flow, travel/lag times	Examine administration of groundwater regulation and coordination among agencies	
	Avoid basing policy on just one issue only, it must be comprehensive	Explore ways to resolve intergovernmental conflicts over groundwater issues statutorily	Consider the economic impacts of groundwater management actions	Improve method of providing private well owners and drillers with information regarding water quality and quantity.	Determine value of groundwater resource relative to economic value of use - limits?	Work at state, national and international levels for coordination of groundwater protection and use.	
	Invoke the precautionary principle when data is not available	Address historical and cultural significance in DNR regulations (tribal considerations).	Promote "Cooperative Compliance" - working with regulated community to make informed economic decisions based on science.	Use groundwater models and water budgets as an effective educational tool			
	Consider equity in quality and quantity issues	Clarify who should bear the burden of proof as to whether an activity causes harm to groundwater resource		Target education for local politicians and Legislators (seminars, informational packets)			

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	Determine if it's better to increase groundwater quality at the expense of quantity or vice versa	Enforce current codes.		Promote groundwater education through electronic media (e.g. "Into the Outdoors" TV program)			
	Recognize long-term nature of issues - areas not experiencing problems today may have problems tomorrow	Build enforcement into new laws		Educate community leaders first regarding groundwater problems and possible solutions			
	Consider how groundwater protection is prioritized among other policy and financial needs			Educate the public about groundwater as a working resource - used by industry, public water systems, agriculture, etc.			
<b><u>Q. Impacts of Withdrawals on Quality</u></b>	Evaluate whether over-pumping may cause irreversible changes to water quality		Optimize pumping to reduce TDS and radioactivity in groundwater		Study geochemical changes (hydraulic connection and mixing between aquifer units) as result of major cones of depression statewide	Explore use of small cluster wells to provide communities with water rather than deep wells with poor water quality	
					Need more study on impacts of mining withdrawals	Balance quality needs vs. quantity needs.	
<b><u>R. Groundwater/ Surface Water Interactions</u></b>	Manage groundwater and surface water together (DNR structural changes?)	Include interconnectedness of surface water and groundwater in groundwater law (purpose section).	Consider cost of moving wells to preserve quantity for streams, springs.	Draw connections between groundwater quantity issues and ecological effects.	Increase funding for research on groundwater/ surface water interactions		

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<i>Impacts of withdrawals on surface waters</i>	Use surface water to take pressure off aquifers	Establish regulations to protect wetlands and wildlife habitat from groundwater withdrawals		Demonstrate interrelated nature of surface and groundwater	Develop ways to estimate the quantity of water that can be withdrawn without impacts on environment		
	How can society's water needs be met without adverse impacts on surface waters that provide quality of life?				Research on aquatic habitat issues - groundwater inputs to cold water trout streams		
					Research how infiltration prevents thermal contamination of surface water		
<b><u>S. Land Use and Development</u></b>	Address conflict between new development and protection of recharge areas and water quality	Require permits for private well installation as part of land use planning	Promote use of "conservation" subdivisions (clustered homes w/greenspace between clusters)	Use "lack of planning" case studies as educational tools	Develop tools to help local communities protect their water supplies via Smart Growth	Take advantage of the opportunity provided by Smart Growth to address groundwater protection	
<i>Smart Growth</i>	Address water supply needs and availability as part of economic and land development (often overlooked)	Consider community growth restrictions to protect groundwater (example Boulder, CO green belt) - although this could contribute to increased urban sprawl	Create incentives for compliance with (advisory) land use plans	Educate local planning committees and water utilities about water supply provisions of Smart Growth plans	Require hydrology (groundwater & surface water) studies of impacts of new development	Recognize limits to Smart Growth planning (limited to local areas; incompatibility of plans in dealing with regional problems; differing regulations along jurisdictional borders; "long" time (10 yr) for implementation)	

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	Recognize that land use patterns must change if start using shallow aquifers for water supply	Create legal mechanism to prohibit extraction of groundwater for private water supplies in areas where development density is high			Document the effects of urban sprawl and rural development on groundwater	Make compliance with land use plans compulsory	
	Reduce runoff and soil erosion. Soil conservation practices will address quality and quantity issues.	Require a public water supply system for intense development (certain threshold)- make this a condition of new development			Research on the loss of groundwater recharge areas in the state	Give planning commissions authority over sewer extensions	
	Address the loss of undeveloped land which has attenuative properties	Adopt zoning to protect land from development, urban sprawl and highway related contamination				Minimize unsound land use such as subdivisions outside city service areas.	
	Improve forestry practices to address quality and quantity issues (e.g. trees spaced out or preventing removal from watersheds).	Ensure legislation is fair to developers					
	Achieve balance between land use for farming or preservation and development						
<b><u>T. Aquifer Storage and Recovery (ASR)</u></b>	Consider using ASR to balance seasonal variation in surface water resources.	Should injection well prohibition be sustained?			Need ASR studies, legal and geochemical implications		



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	Aquifer storage may improve quantity but compromise quality.				Need more research on ASR before it should be allowed in WI		
<b><u>U. Water Reuse and Recycling</u></b>	Use recycled wastewater to recharge groundwater for both domestic and community use.	Review wastewater disposal and treatment rules to allow for recycling	Encourage use of recycled water with incentives		Compile best management practices for companies practicing re-use of recycled water.		
<b><u>Other</u></b>							
<b><u>V. Regional Approaches</u></b>	Change from management by political boundary to a regional or watershed approach	Establish regional institutions for water management	Help communities learn about regionalization benefits. Precedent for cooperation not always there.	Educate public that water is a regional planning issue	Find solutions for regional water shortages	Need regional or basin-wide planning for distribution and well development.	How will SMART growth deal with this issue?
	Scale of solution must match scale of problem	Delegate a permitting authority to DNR basin groups.	Determine costs of regional cooperation	Educate local and regional government officials; citizens (they can put pressure on public officials to act).	Research on protocol for cooperation among jurisdictional entities	Develop regional water supply plan to establish who will use what sources and set pumping schedule.	Need a longer-term perspective
	Water districts needed with local commitments - can't opt out after commitment	Water Management Districts - who would broker the needs?		Education on where we have water.	Delineate groundwater basins - do they coincide with surface water basins?	Create mechanism for planning/ coordination beyond local level (but "below" state level)	<i>Create an environment that encourages (mandates?) regional cooperation</i>
	Create regional guidance to assist with water quantity issues	Tie regional water plans to state permitting requirements, like sewer plans			Develop regional hydrological models.	Share resources between jurisdictional boundaries (e.g. wells, treatment, distribution)	<i>Develop consensus between affected communities</i>

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	Need to define "regional"	Strengthen authority of regional water authorities.			Compile data and statistics on regional aquifer capacity	Need for creative approaches to regional planning for groundwater use to prevent tragedy of the commons.	
	Empower regional planning commissions (e.g. allow them to determine where new high water use industries will be located - to prevent local communities from competing for these businesses)	Institutional question on how decisions will be made. Who referees equity?			Demonstrate how regionalism could better affect quality and quantity management of the groundwater resource (cost/benefit analysis; case studies; scenarios)	Use required provision of Smart Growth plans to develop strategy to handle inter-government conflicts	
	Integrate agricultural drainage districts into regional management issues	Establish legal framework to ensure regional cooperation/solution				Need environmental and industry groups represented as well as local governments.	
		Create legal, regulatory provisions to protect groundwater at regional level				Get buy-in from the proper authorities before proceeding with a regional management approach	
<b>W. "Whose Water Is It?"</b>	Clarify water rights w/ respect to groundwater: who has the right to access groundwater?	Expand Public Trust Doctrine to include groundwater specifically				Should private landowners rights be preserved regarding use of groundwater even if a public utility is formed in the area?	

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	Groundwater should not be dealt with as a private property right – transcends political boundaries and property	Make sure our laws protect groundwater from being sold as a commodity					
	Address abuse of groundwater use: private property right vs. neighbor's or public's rights	Define who owns the groundwater.					
<b><u>X. Research Support</u></b>	Establish a body to set research priorities	Use sound science in setting policy and regulations	Explore ways to fund basic data gathering and research	Educate public and legislators about importance of research	Identify other states' efforts in regards to groundwater research	Who should direct and coordinate research? Should it be the GCC?	
	Make sure that researchers can do research that is unbiased and not influenced by outside interests		Improve focus of Groundwater Research Advisory Council (GRAC) funding to look at longer term issues, not just "hot" issues.	Ensure that education is scientifically motivated.		Improve coordination regarding research findings	
	Encourage implementation of research findings			Communicate objective of data sharing			
<b><u>Y. Monitoring and Data Management Systems</u></b>	Policy should drive data collection needs		Provide funding for baseline groundwater monitoring	Improve information and education programs for private well monitoring	Promote long-term monitoring to determine statistical trends.	Consider time lag between problems and observing the impact in monitoring network	Take advantage of technology to organize and use available data.

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	Establish a comprehensive groundwater monitoring strategy on a multi-year basis		Fund maintenance and improvements to monitoring network (gaging stations and wells)	Communicate objectives of data systems	Collect background data on streamflows and groundwater levels.	Improve accessibility and utility of groundwater data systems ("data rich, information poor")	
	Establish a comprehensive program for testing private wells				Address long term management of records		
<b><u>Z. Building a Groundwater Constituency</u></b>	Promote and foster leadership on groundwater issues	Need legislative leaders who are motivated and understand the science.		Clearly articulate need for sustainability of groundwater resource		GCC should take a position on issues.	
	"Water for Wisconsin Forever": Combine education/research/ policy efforts. Market to public and governor's office. Mobilize environmental groups.	Need strong advocate for the public interest not influenced by political pressure		Educate the public to be aware of groundwater issues and to push for groundwater legislation		Education at local level now possible; concerned citizens can educate themselves or hire experts to educate them, and pass this information on to local government decision makers	
	Recognize ethical responsibility to future generations to be wise stewards in protecting our groundwater resource	"There should be more lobbyists to speak for the private sector"		Be proactive but recognize crisis mentality of public. Convey sense of urgency.		How to educate when there are disagreements about scope of problem	
	Develop leadership by the environmental community on these issues	"Resource agencies should provide information, not advocacy."		Clearly educate public about goals			